ABSTRACT OF THE INVENTION

Disclosed is a titration method for determining the concentration of a base developer solution to within ±0.02 mN, which involves performing steps (a) and (b) in any order: (a) weighing to ±0.001%, an amount of a solution of aqueous base developer of known approximate normality; (b) weighing to ±0.001%, an amount of an acid titrant sufficient to neutralize at least 90% of the base developer in the solution of step (a); thereafter performing steps (c)-(e) in the following order: (c) contacting the aqueous base developer solution with the acid titrant to neutralize at least 90% of the base developer in the solution, and leaving from about 1% to about 10% of the original aqueous base developer as residual non-neutralized base developer in the solution; (d) titrating the residual non-neutralized base developer in the solution with the acid titrant to the end point in an inert atmosphere, wherein the temperature of the titrant is maintained at a temperature of about 20-30°C ±0.2°C, the normality of the acid titrant is known to within ±0.01 mN; and wherein the vessel dispensing the titrant contains sufficient titrant to titrate the residual non-neutralized base developer in the solution to the end point, without having to be refilled, and wherein the volume of titrant dispensed for the titration is at least 70% of the vessel volume; and (e) calculating the normality of the aqueous base developer solution to within ±0.02 mN; wherein the density of the aqueous base developer solution and the titrant are known to ± 0.00001 g/ml, and steps (a)-(c) are carried out under conditions sufficient to minimize base developer and titrant evaporation and uptake of carbon dioxide from the atmosphere.